

an array of active pixel sensor pixels, each pixel producing a signal based only on the received radiation within the pixel;

a plurality of programmable summation kernels, each summation kernel programmable to selectively sum together a number of said pixels from said active pixel sensor; and

a resolution control circuit, producing an output signal which controls a size of said summation kernels between a minimum value kernel size and a maximum value kernel size;

wherein said resolution control circuit monitors a magnitude of a received signal level from pixels, and automatically changes the size of the summation kernels based on said signals from said pixels.

5. (Amended) A device as in claim 3, wherein said illumination condition is judged by a magnitude of said signal from said active pixel sensor pixels.

12. (Amended) An adaptive programmable light imaging device, comprising:

an array of active pixel sensor pixels, each pixel producing a signal based only on the received radiation within the pixel;

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a plurality of programmable summation kernels, each summation kernel programmable to selectively sum together a number of said pixels from said active pixel sensor; and

a resolution control circuit, producing an output signal which controls a size of said summation kernels between a minimum value kernel size and a maximum value kernel size, further comprising a frame memory, for storing an entire frame as a stored frame, and

wherein said resolution control circuit is based on illumination condition in said stored frame, and decreases the kernel size in a subsequent frame for better illumination condition and increases the kernel size in said subsequent frame for poorer illumination condition.

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15. (Amended) An adaptive programmable light imaging device, comprising:

an array of active pixel sensor pixels, each pixel producing a signal based only on the received radiation within the pixel;

a plurality of programmable summation kernels, each summation kernel programmable to selectively sum together a number of said pixels from said active pixel sensor; and

a resolution control circuit, producing an output signal which controls a size of said summation kernels between a minimum value kernel size and a maximum value kernel size,

wherein said active pixel sensor includes a photoreceptor and a buffer transistor and a selection transistor, and

further comprising calibrating the circuit the circuit prior to detecting a desired resolution.

16. (Amended) An adaptive programmable light imaging device, comprising:

an array of active pixel sensor pixels, each pixel having an in-pixel buffer transistor, and in-pixel selection transistor, and a photoreceptor producing a signal based only on the received radiation within the pixel;

a double sampling circuit, operating to eliminate at least one amplifier offset from said signal;

a plurality of programmable summation kernels, each summation kernel programmable to selectively sum together a number of said pixels from said active pixel sensor; and

a resolution control circuit, including an illumination condition detecting part connected to said active pixel sensor pixels and determining the illumination condition therefrom, and producing an output signal which automatically controls a size of said summation kernels between a minimum value kernel size